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A study was conducted to determine what variables are prepotent in establishing a teacher's expectancy for a pupil. Seven 20-minute experiments were conducted using a sample of 84 teachers who were randomly assigned to an experimental treatment and then reassigned for each subsequent experiment regardless of their previous assignment. Treatments consisted of presenting hypothetical students' cumulative folders to the Ss. Based on the information therein, Ss answered six questions (each with five possible responses) involving their expectations for the academic performance of that student. In any given experiment, the information in the folders was identical for all Ss with two exceptions: grade level (first or sixth) and one of the other variables (IQ, grade average, sex, chronological age, standardized test performance, anecdotal records, or socioeconomic background) which were systematically introduced and varied, each in a separate experiment. Data resulting from Ss' composite scores on the six criterion questions constituting the dependent variables were analyzed by analysis of variance, and multiple comparison tests (Newman-Keuls) were run. It was inferred that IQ, course grades, standardized test results, and socioeconomic background are perceived by teachers as the characteristics on which they can most validly base their expectations of students' performance. Findings stress the importance of training teachers in measurement and interpretation of socioeconomic information. (JS)

AN EXPLORATORY STUDY OF THE EFFECT OF SELECTED VARIABLES UPON TEACHER EXPECTATION OF PUPIL SUCCESS[1]

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Considerable emphasis has been placed recently on the role that perceptions and expectations play in determining human behavior. Of importance are workers' perceptions of their employer's expectations for them, students' perceptions of their teacher's expectations for them, etc. But of equal importance are the same perceptual-expectancy relationships in reverse; that is, an employer's perceptions of worker performance, a teacher's expectations of probable pupil success, etc. In a recent and extensive review, Rosenthal (1966) considered the effects of one person's expectancies on associates. In fact, Rosenthal and Jacobson (1968) suggested that expectancies may work as self-fulfilling prophecies. A brief review of some of the more salient studies follows.

Jastrow (1900) reported on the effects of expectancies as demonstrated by the early work done on the Hollerith tabulating machine by clerks in this country. In extensive orientations, supervisors and even Hollerith himself gave the workers expectations that learning to perform adequately on the keypunch machine would be extremely difficult. Workers were slow in achieving high performance levels and many had emotional difficulties because of resulting tensions. When 200 new clerks were brought on the

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job at this point and were not told of the task's great difficulty, they were soon performing at the levels established by the initial group. In three days many of these new workers were achieving the levels attained by the initial group only after five weeks of indoctrination and two weeks of practice. The second group had no manifestations of emotional illness.

Guthrie (1938) reported on the effects on a shy, socially incompetent woman of experiences arranged by a group of college men. As a result of these planned encounters, the girl became much more poised socially because this was the behavior that was expected of her by the college men that she met. Other examples are cited by Rosenthal (1966) that suggest how the expectancies of data collectors are influential somehow in determining the types of verbal responses received (see Harvey, 1938; Rice, 1929; and Wyatt and Campbell, 1950). Rosenthal (1966) himself has done extensive research relating to the communication that exists between subject and experimenter and, with Jacobson (1968), between teacher and pupil; aspects of this latter area of investigationare reportedly undergoing extensive review by other researchers.

A few studies have suggested possible sources of teacher expectancies. Glass (1967) reported data which indicated that teachers are primarily concerned with behavior that may be disruptive of school routine and are less concerned with behavior taking place outside of school. The student's adjustment to school was considered by the teachers to be of more concern than the student's aptitude. Hastings (1966) also presented relevant data indicating that of three categories of tests normally available in the schools (intelligence, aptitude, and achievement measures), intelligence

tests are the most commonly used. He asked summer graduate students about their use of intelligence tests in making decisions about, or with, students. The six main uses found were: grouping homogeneously; checking academic progress; conducting special class treatments; retaining or promoting; choosing courses; and choosing vocations. Hastings found that intelligence tests were completely available to approximately 90 percent of his sample; however, in a problem situation consisting of simulated cumulative records and decisions about sectioning, the teachers paid more attention to judgments of the student by other teachers than to intelligence test results.

The preceding studies may have important implications for education. If the expectations that a teacher has for a child's performance, particularly in the early grades, do influence how that child will perform, it seems important that the teacher hold high expectations for every child. MacKinnon (1962) suggested that the child will act as an adult expects him to act. If this, in fact, is the case, two questions immediately become relevant: first, how does the teacher communicate these expectancies to the child; and, second, what variables are prepotent in establishing a teacher's expectancy for a pupil? The present experiments constitute an attempt to answer the latter question.

METHOD

Subjects

Ss were 84 summer session students enrolled in eight education courses. For the most part, these adults were area teachers who had returned to

summer school to further their education. They taught predominantly in schools located in small industrial and rural communities. Few of the teachers came from large urban school systems.

Experimental Design and Procedures

Seven related experiments were undertaken with the sample. Ss were randomly assigned to an experimental treatment and then reassigned for each subsequent experiment regardless of their previous experimental assignment. Data resulting from Ss' composite scores on the six criterion questions constituting the dependent variable were analyzed by analyses of variance, as post-test only designs were utilized.

Treatments were implemented by presenting hypothetical students' cumulative folders to the Ss. [This procedure, although independently arrived at, was similar to that advocated by Hastings (1966), who pointed out the need for more studies of how various decisions are made and suggested the use of simulated, cumulative records to obtain information on decision-making by teachers.] Based on the information therein, Ss then answered questions involving their expectations for the academic performance of that student. There was no break between presentation of a file, Ss' responses, and presentation of the next file. The seven experiments took approximately 15-20 minutes. In any given experiment, information in the folders was identical for all Ss with two exceptions: grade level (the student was described as either a first or sixth grader), and the other variable under investigation. Thus, grade level was always a factor and seven other factors (IQ, grade average, sex, chronological age, standardized test performance, anecdotal records and social economic background) were systematically introduced and varied, each in a separate experiment. This list of factors was considered to include the primary characteristics which may cue a teacher when making decisions about a student.

The levels of the seven variables were normally selected to be not too dissimilar from each other with the rationale that if effects were found with minimal differences among levels, they would also be found with larger differences. For example, in the first experiment, the three IQ levels selected were 94, 100, and 106. These three levels combined with the two level factor of grade, grade one and grade six, resulted in six cells to which the 84 Ss were randomly assigned. Thus, all the information in the cumulative records for all 84 Ss was identical with the exception of IQ and grade level, these two factors being those systematically varied in the first experiment.

The levels used for the other six variables are as follows. In the case of grade average for first grade students, it was reported as slightly below average, average, and slightly above average; for grade six pupils, it was reported as C+ (85 percent), B (88 percent), or B+ (91 percent). In the case of chronological age, the age levels for grade one students were 5 years 10 months, 6 years 1 month, and 6 years 4 months; the age levels for grade six students were 10 years 10 months, 11 years 1 month, and 11 years 4 months. For first graders, standardized test performance on a test taken at the start of the school year was reported in the following grade placement units: .8, 1.0, or 1.2; the related marks for grade six students were 5.7, 6.0, or 6.3. Anecdotal records were identical for grade one and grade six students. They consisted of a standard comment under all three treatment conditions. This hand-written standard comment was accompanied by a negative teacher interpretation in one case, no interpretation in another, and a positive interpretation in the third case. For example, the following three anecdotal notes would constitute the three treatment levels:

> Johnny carried four books home last night; I bet he did not read any of them (Negative).
>
> Johnny carried four books home last night (Neutral).
>
> Johnny carried four books home last night; I bet he read all of them (Positive).

The variable of social economic status was introduced identically at grades one and six. The levels for the father's occupation were laborer, insurance agent and doctor. In the case of the laborer it was also reported that the child was living with a guardian rather than parents. In the final experiment, sex was assigned by listing the student as either male or female and also varying the first name of the student.

The only differences between cumulative files were in the variables under investigation; thus, the great bulk of the data in the cumulative files for any given experiment was identical. Overall, then, the treatments were rather subtle manipulations of the independent variables.

Dependent Variable

After reviewing the cumulative file for a student, each S was given six questions, each with five possible responses, related to the expectations that he held for that student (based on the information in the student's cumulative file). On two questions, responses were excellent, good, average, poor, or very poor; the scale provided to assist Ss on these questions was: excellent - top 10 percent, average - middle 35 percent, very poor - bottom 10 percent. The six questions asked and subsequently scored were:

> What would you expect this student's future school performance to be?
>
> What would you expect this student's future level of social adjustment to be?

How active in school functions would you expect this student to be? [Possible responses varied from extremely active to extremely inactive.]

You would expect this student to be a (n) _____. [Possible responses varied from extreme overachiever to extreme underachiever.]

In your judgment do you feel that this student is "ready" for the grade he is entering? [Possible responses varied from definitely to definitely not.]

What education level would you expect to be the highest the student will attain? [Possible responses varied from graduate school to grade six.]

Responses to each item were scored 1 to 5 with 5 points being assigned to the response indicating highest expectations, 4 points to the next highest, etc. The sum of the scores on the six questions was used as the dependent variable.

After the experiments were over, Ss were asked to rank order the seven variables on how important each was perceived in understanding and predicting a child's performance and adjustment level.

RESULTS

Results of the seven ANOVAs appear in Table 1. The df for error varied from 72 to 78 because the random assignment of the 84 Ss did not always result in equal cell n's; random omission of a few Ss was undertaken to get equal n's to facilitate analysis. Significant F values were found for the IQ, school grades, standardized test, and socioeconomic factors in four experiments and for the grade factor in all experiments except the one in which school grades were varied. Resultant means and standard deviations for significant F's are given in Table 2.

Table 1

F-Ratios for Expectation Scores

Treatment Variable	Error Mean Square	F-Ratio		
		Treatment (T)	Grade (G)	T x G
IQ (df = 2)	4.47 (df = 78)	4.93**	8.65**	—
Grades (df = 2)	9.01 (df = 72)	3.54*	2.75	—
Sex (df = 1)	4.21 (df = 76)	—	21.45***	—
Age (df = 2)	4.06 (df - 72)	2.89	20.21***	1.68
Standardized Tests (df = 2)	4.03 (df = 72)	10.18***	14.28***	—
Anecdotal Notes (df = 2)	6.39 (df = 78)	2.28	8.11**	1.82
Socioeconomic Background (df = 2)	4.24 (df = 78)	31.04***	9.77**	—

Note: A dash (—) indicates a F<1.

* p<.05
** p<.01
*** p<.001

Table 2

Means and Standard Deviations for Significant F-Ratios

Experiment	Source	Levels	$\bar{X}$	s
IQ	Treatment	High (106)	10.33	4.82
		Med. (100)	10.18	1.72
		Low (94)	8.80	4.34
	Grade	Six	10.44	4.87
		One	9.02	1.66
Grades	Treatment	High (B+)	10.33	3.20
		Med (B)	9.88	6.22
		Low (C+)	8.43	7.09
Sex	Grade	Six	9.51	4.37
		One	7.35	6.38
Age	Grade	Six	10.25	5.15
		One	8.51	6.04
Tests	Treatment	High (1.2 or 6.3)	11.10	5.18
		Med. (1.0 or 6.0)	10.04	5.06
		Low (.8 or 5.7)	8.45	5.57
	Grade	Six	10.81	4.72
		One	8.98	5.86
Anecdotal Notes	Grade	Six	10.98	2.77
		One	9.26	5.36
Socioeconomic Background	Treatment	High	11.61	2.08
		Med.	9.93	4.33
		Low	7.40	4.96
	Grade	Six	10.34	4.04
		One	8.86	4.30

Multiple comparison tests, using the Newman-Keuls procedure, were run to locate the source of significant differences when more than two means were involved. For both IQ and grades, the means for the medium and high treatments were significantly different from the mean for the low treatment, but not from each other. For both standardized tests and socioeconomic background, the means for the medium and high treatments were significantly higher than the mean for low treatment, and, in addition, the mean for the high treatment was significantly higher than the mean for the medium treatment.

Ss were also asked to rank order the seven variables, separately for a sixth grade and a first grade child, giving a rank of 1 to that variable which would be most attended to in making judgments about a child, a 2 to the variable second in importance, etc. Table 3 indicates the resultant order.

DISCUSSION

It is interesting to note that the treatment effects were quite large in all experiments when one considers the small differences in treatment levels. This fact seems to indicate that the treatments themselves were quite powerful within the given ranges of the levels of the seven factors. It can be inferred that teachers may perceive IQ, grades, standardized test results, and socioeconomic background as characteristics on which they can base their expectations of student performance most validly when considering the given ranges of the levels for each factor. This finding is not in close agreement with Glass (1967) who found that teachers considered adjustment to school more important than aptitude in making recommendations concerning dropouts.

Table 3

Rank Ordering of Variables on Importance for Forming Expectancies for First and Sixth Graders

Student's Grade	Factor	Average Rank
Sixth	Standardized Tests	3.04
	Grade Average	3.23
	Socioeconomic	3.74
	Sex	4.13
	IQ	4.28
	Age	4.74
	Anecdotal Notes	4.83
First	Socioeconomic	3.48
	IQ	3.75
	Standardized Tests	3.82
	Age	4.14
	Sex	4.22
	Anecdotal Notes	4.24
	Grade Average	4.34

This result, however, may be a function of the different dependent variables used in the two studies; teachers in the Glass study made recommendations concerning potential dropouts, while in the present study, teachers were asked to form expectations and predict achievement. Furthermore, in the present study teachers were asked to consider more student characteristics, with none of the seven variables related directly to adjustment.

The present data also vary somewhat from Hastings' findings. Although teachers in the present study did find IQ test score to be an important characteristic to use in forming expectations, they did not find other teachers' notes as important; the data tended in the direction suggested by Hastings, but differences did not reach significance. The difference in treatment effect could well have resulted from using a less powerful anecdotal notes treatment in the present study.

A rather disturbing fact which is obvious from the data is that the teachers consistently expected higher performance from pupils who differed in grade level, but on no other characteristics, expecting higher performance from students at the sixth grade level. It is difficult to explain why the teachers responded in this way. Further research on this question is needed.

The data indicated that the teachers tended to rely heavily on testing to make their predictions (IQ, standardized tests, grades), considering the ranges of the levels of these factors, the only exception being the socioeconomic factor. These findings support the argument for more intensive training in the area of measurement and test theory for prospective teachers than is now made available. In addition, since the data suggest that teachers' knowledge of students' socioeconomic background may influence their expectations for a child, teachers ought to be better

trained to use information concerning the students' socioeconomic status. The data presented in Table 3 partly support this argument as one can see by the teachers' orderings of the seven factors. The rankings are quite consistent with the results reported in Tables 1 and 2.

A follow-up study of the present study has been implemented using 38 female juniors at Bucknell University, preparing to be elementary teachers. The average age of this group was 20, and they would be described generally as well above average intelligence. The purpose of collecting data from this sample was to compare their responses over the same seven experiments with the teacher sample. Briefly, the students indicated that course grades, standardized test results, teacher anecdotal notes, and socioeconomic background were important characteristics which they used in forming expectations for students using the given ranges of the levels for the seven factors. The grade factor was found to be a significant source of variance in four of the seven experiments.

In conclusion, it might be instructive to reiterate several points. First, in answering the question of what variables are prepotent in establishing a teacher's expectancy for a pupil, it can be inferred from the data that of the seven factors presented in this study, IQ, course grades, standardized test results, and the student's socioeconomic background appear to be important within the ranges of the levels for the seven factors. Second, for some unexplainable reason, the teachers reacted quite differently to the cumulative files of students in different grade levels, but otherwise having the same characteristics. Third, based on the present data, it was suggested that more thought ought to be given to measurement course requirements for teachers and the training of teachers to handle socioeconomic information. Further research is indeed

needed to substantiate the data reported here, to present data from different subject populations, to investigate other variables and the same variables in other ways (see Glass, 1967), and to investigate the question of how, with whom, and when these variables affect the teacher-student relationship.

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